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PTO/SB/08A (08-00)

Substitute for form 1449A/PTO				<i>Complete if Known</i>	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(use as many sheets as necessary)</i>					
Sheet	1	of	3	Application Number	10/730,067
				Filing Date	December 9, 2003
				First Named Inventor	Louis B. ROSENBERG
				Group Art Unit	2674
				Examiner Name	
				Attorney Docket Number	IMMR-067/04US

U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY
		Number	Kind Code ² (if known)		
XW	A1	5,785,630		Bobick, et al.	07/28/1998
	A2	5,766,016		Sinclair et al.	06/16/1998
	A3	5,547,382		Yamasaki et al.	08/20/1996
	A4	5,466,213		Hogan et al.	11/14/1995
	A5	5,334,027		Wherlock	08/02/1994
	A6	5,309,140		Everett, Jr., et al.	05/03/1994
	A7	5,299,810		Pierce et al.	04/05/1994
	A8	5,275,174		Cook	01/04/1994
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	A10	5,240,417		Smithson et al.	08/31/1993
	A11	5,212,473		Louis	05/18/1993
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	A13	5,038,089		Szakaly	08/06/1991
	A14	5,035,242		Franklin et al.	07/30/1991
	A15	5,022,407		Horch et al.	06/11/1991
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	A22	4,708,656		de Vries et al.	11/24/1987
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	A28	3,911,416		Feder	10/07/1975
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	A32	3,517,446		Corlyon et al.	06/30/1970

¹ Unique citation designation number.

² See attached Kinds of U.S. Patent Documents.

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XW	A33	3,497,668		Hirsch	02/24/1970
	A34	3,220,121		Cutler	11/30/1965
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Examiner Initials*	Cite No. ¹	Foreign Patent Document			Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	T ⁴
		Office ¹	Number ²	Kind Code ³ (if known)			
XW	B1		0 349 086	A1	Stork Kwant B.V.	01/03/1990	

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ⁴
XW	C1	Balgrie, "Electric Control Loading - A Low Cost, High Performance Alternative," <i>Proceedings of Interservice/Industry Training Systems Conference</i> , pp. 247-254, November 6-8, 1990	
	C2	Iwata, "Pen-based Haptic Virtual Environment," 0-7803-1363-1/93 IEEE, pp. 287-292, 1993	
	C3	Russo, "The Design and Implementation of a Three Degree of Freedom Force Output Joystick," <i>MIT Libraries Archives</i> pp. 1-131, May 1990, archived 8/14/90	
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	C5	Jones et al., "A perceptual analysis of stiffness," ISSN 0014-4819 Springer International (Springer-Verlag); <i>Experimental Brain Research</i> , Vol. 79, No. 1, pp. 150-156, 1990	
	C6	Burdea et al., "Distributed Virtual Force Feedback, Lecture Notes for Workshop on Force Display in Virtual Environments and its Application to Robotic Teleoperation," 1993 IEEE International Conference on Robotics and Automation, pp. 25-44, 05/02/1993	
▼	C7	Snow et al., "Model-X Force-Reflecting-Hand-Controller," NT Control No. NPO-17851; JPL Case No. 7348, pp. 1-4 with 45 pages of attachments, 06/15/1989	
	C8	Ouh-Young, "Force Display in Molecular Docking," Doctoral Dissertation, University of North Carolina at Chapel Hill, UMI Order No. 9034744, p. 1-369, 1990	

¹ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3).

² For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document.

³ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible.

⁴ Applicant is to place a check mark here if English language Translation is attached.

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XW	C9	Tadros, "Control System Design for a Three Degree of Freedom Virtual Environment Simulator Using Motor/Brake Pair Actuators," <i>MIT Archive</i> , pp. 1-88, February 1990, archived 8/13/90
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	C16	Patrick et al., "Design and Testing of A Non-reactive, Fingertip, Tactile Display for Interaction with Remote Environments," <i>Cooperative Intelligent Robotics in Space</i> , Rui J. deFigueiredo et al, Editor, Proc. SPIE Vol. 1387, pp. 215-222, 1990
	C17	Adelstein, "A Virtual Environment System For The Study of Human Arm Tremor," <i>Ph.D. Dissertation</i> , Dept. of Mechanical Engineering, MIT, June 1989, archived 3/13/90
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	C21	Minsky, "Computational Haptics: The Sandpaper System for Synthesizing Texture for a Force-Feedback Display," <i>Ph.D. Dissertation</i> , MIT, June 1995, archived 7/6/95
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	C26	Howe, "A Force-Reflecting Teleoperated Hand System for the Study of Tactile Sensing in Precision Manipulation," <i>Proceedings of the 1992 IEEE International Conference on Robotics and Automation</i> , Nice, France, May 1992
	C27	Eberhardt et al., "OMAR - A Haptic display for speech perception by deaf and deaf-blind individuals," <i>IEEE Virtual Reality Annual International Symposium</i> , Seattle, WA, Sep. 18-22, 1993
	C28	Rabinowitz et al., "Multidimensional tactile displays: Identification of vibratory intensity, frequency, and contractor area," <i>Journal of The Acoustical Society of America</i> , Vol. 82, No. 4, October 1987
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	C30	Bejczy et al., "A Laboratory Breadboard System For Dual-Arm Teleoperation," <i>SOAR '89 Workshop</i> , JSC, Houston, TX, July 25-27, 1989
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	C32	Marcus, "Touch Feedback in Surgery," <i>Proceedings of Virtual Reality and Medicine The Cutting Edge</i> , Sep. 8-11, 1994
▼	C33	Bejczy, et al., "Universal Computer Control System (UCCS) For Space Telerobots," CH2413-3/87/0000/0318501.00 1987 IEEE, 1987

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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44C#011.DOC

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¹ Unique citation designation number.

² Applicant is to place a check mark here if English language Translation attached.



(1 of 2)

PTO/SB/08A (10-01)

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U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449A/PTO				Complete If Known	
				Application Number	10/730,067
				Filing Date	December 9, 2003
				First Named Inventor	Louis B. Rosenberg
				Art Unit	2674
				Examiner Name	Unassigned
Sheet	1	of	3	Attorney Docket Number	IMMR067/04US

U.S. PATENT DOCUMENTS					
Examiner	Cite No. ¹	Document Number		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document
		Number	Kind Code ² (if known)		
XW		6,422,941		7/23/2002	Thorner et al.
		6,160,489		12/12/2000	Perry et al.
		6,111,577		8/29/2000	Zilles et al.
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		4,127,752		11/28/1978	Lowthorp
		2,972,140		2/14/1961	Hirsch

Examiner Initials [*]	Cite No. ¹	Foreign Patent Document			Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Country Code ³	Number ⁴	Kind Code ⁵ (if known)			
XW		JP	H2-185278		7/19/1990	Taito Corporation	
XW		JP	H4-8381		1/13/1992	Epoch Co. and Key-Planning Co.	
XW		JP	H7-24147		1/27/1995	Sega Corporation	
XW		JP	H5-192449		8/3/1993	Taito Corporation	

Examiner Signature	/Xiao Wu/	Date Considered	05/29/2006
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¹ Applicant's unique citation designation number (optional). ² Kind Codes of U.S. Patent Documents at www.uspto.gov or MPEP 801.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 18 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

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OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS		
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		CALDER, "Design of A Force-Feedback Touch-Introducing Actuator For Teleoperator Robot Control," <i>Bachelor of Science Thesis</i> , MIT, May 1983, archived June 23, 1983.
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		BLISS, "Optical-to-Tactile Image Conversion for the Blind," <i>IEEE Transactions on Man-Machine Systems</i> , Vol. MMS-11, No. 1, March 1970.
		JOHNSON, "Shape-Memory Alloy Tactile Feedback Actuator," <i>Armstrong Aerospace Medical Research Laboratory</i> , AAMRL-TR-80-039, August, 1990.
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		EBERHARDT et al., "Inducing Dynamic Haptic Perception by The Hand: System Description and Some Results," DSC-Vol. 55-1, <i>Dynamic Systems and Control</i> : Volume 1, ASME 1994.
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		"Cyberman Technical Specification," <i>Logitech Cyberman SWIFT Supplement to Logitech Mouse Technical Reference and Programming Guide</i> , 4/5/1994.
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▼		"Component Maintenance Manual With Illustrated Parts List, Coaxial Control Shaker Part No. C-25502," Safe Flight Instrument Corporation, Revised 28 January 2002 (3 pages).

Examiner Signature	/Xiao Wu/	Date Considered	05/29/2006
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XW		ROSENBERG, "Virtual Fixtures: Perceptual Overlays Enhance Operator Performance In Telepresence Tasks," Ph.D. Dissertation, Stanford University, June 1994.

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Signature

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Date
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(use as many sheets as necessary)</i>				Application Number	10/730,067
Sheet	2	of	11	Filing Date	December 9, 2003
				First Named Inventor	Louis B. Rosenberg
				Art Unit	2674
				Examiner Name	Unassigned
				Attorney Docket Number	IMMR067/04US

U.S. PATENT DOCUMENTS					
Examiner	Cite No. ¹	Document Number Number Kind Code ² (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
XW		4,769,763	09-1988	Trieb et al.	
		4,787,051	11-1988	Olson	
		4,791,934	12-1988	Brunnett	
		4,798,819	01-1989	Mleaster et al.	
		4,800,721	01-1989	Cernenska et al.	
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		4,811,608	03-1989	Hilton	
		4,819,195	04-1989	Bell et al.	
		4,839,838	06-1989	LaBiche et al.	
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		5,095,303	03-1992	Clark et al.	
		5,103,404	04-1992	McIntosh	

Examiner Signature	/Xiao Wu/	Date Considered	05/29/2006
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		Number Kind Code ² (if known)			
XW		5,107,080	04-1992	Rosen	
		5,116,051	05-1992	Moncrief et al.	
		5,128,948	06-1992	Mitchell et al.	
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		5,282,777	11-1993	Low et al.	

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Sheet	4	of	11	First Named Inventor	Louis B. Rosenberg
				Art Unit	2674
				Examiner Name	Unassigned
				Attorney Docket Number	IMMR067/04US

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XW		5,264,768	11-1993	Gregory et al.	
		5,275,565	01-1994	Moncrief	
		5,289,273	02-1994	Lang	
		5,298,848	03-1994	Ledley	
		5,298,871	03-1994	Paley	
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		5,589,828	12-1996	Armstrong	

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Sheet	5	of	11	First Named Inventor	Louis B. Rosenberg
				Art Unit	2674
				Examiner Name	Unassigned
				Attorney Docket Number	IMMR067/04US

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XW		5,589,854	12-1996	Tsal	
		5,591,924	01-1997	Hilton	
		5,623,582	04-1997	Rosenberg	
		5,625,576	04-1997	Massle et al.	
		5,629,594	05-1997	Jacobus et al.	
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		5,897,437	04-1999	Nishiumi et al.	
		6,278,439	08-2001	Rosenberg et al.	

Examiner Initials*	Cite No. ¹	Foreign Patent Document			Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Country Code ³	Number ⁴	Kind Code ⁵ (# known)			
XW		JP	4-34810				
		GB	2254911				
		WO	9502801				
		WO	9842078				
		EP	0826634	A2			

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Sheet	6	of	11	Attorney Docket Number	IMMR067/04US

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		Country Code ³	Number ⁴	Kind Code ⁵ (# known)			
XW	WO	9532459					
	WO	9712357					
	WO	9720305					
	WO	9721160					
↓	WO	9731333					

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XW		Cursor Walso, "Designer's Corner-Useful Technology for Your Idea File," Design News, Mar. 7, 1993, p. 63.
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		"The Personal Digitizer.TM.," Immersion Human Interface Corporation 1994.
		"Useful Technology for Your Idea File," Design News, Mar. 7, 1994, pp. 63.
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		Atkinson, William D. et al, "Computing with Feeling," Comput. & Graphics, vol. 2, No. 2-E, pp. 97-103.
		Batter, James J. et al., "Grope-1: A Computer Display to the Sense of Feel," pp. TA-4-188-TA-4-192.
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V		Burdea, Grigore et al., "Dextrous Telerobotics with Force Feedback-An Overview," Robotica 1991, vol. 9.

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OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS		
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		Colgate J. Edward et al., Implementation of Stiff Virtual Walls in Force-Reflecting Interfaces, Sep. 22, 1993.
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		Iwata, H., "Artificial Reality with Force Feedback: Development of Desktop Virtual Space with Compact Master Manipulator," Computer Graphics, vol. 24, No. 4, 1990, pp. 165-170.
		Iwata, Hiroo et al, Volume Haptization, IEEE 1993, pp. 16-18.
		Jacobsen, S.C. et al., "High Performance, High Dexterity, Force Reflective Teleoperator II," ANS Topical Meeting on Robotics & Remote Systems, Albuquerque, New Mexico Feb. 24-27, 1991, pp. 1-10.
↓		Kelley, A.J. et al., "MagicMouse: Tactile and Kinesthetic Feedback in the Human-Computer Interface Using an Electromagnetically Actuated Input/Output Device," Dept. of Elec. Engineering, Univ. of British Columbia, 1993, pp. 1-27.

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Substitute for form 1449A/PTO				Complete If Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Application Number	10/730,067
(use as many sheets as necessary)				Filing Date	December 9, 2003
				First Named Inventor	Louis B. Rosenberg
				Art Unit	2674
				Examiner Name	Unassigned
Sheet	10	of	11	Attorney Docket Number	IMMR067/04US

OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS		
Examiner Initials *	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
XW		Rosenberg, L.B., "Commercially Viable Force Feedback Controller for Individuals with Neuromotor Disabilities", AL/CF-TR-1997-0016, United States Air Force Armstrong Laboratory, May 1996.
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XW		Tavkhelidze, D.S. "Kinematic Analysis of Five-Link Spherical Mechanisms," Mechanism and Machine Theory 1974, vol. 9, pp. 181-190.
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